Kanem J Med Sci 2024; 18(1): 15-21
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ISSN 2006-4772
https://doi.org/10.36020/kjms.2024.1801.003

Original Article

Addressing Systemic Challenges in HIV/AIDS Data Management: A Study on Personnel Training and Experience in Sub-Saharan Africa

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Abstract

Background: Sub-Saharan Africa bears two-thirds of the global burden of HIV/AIDS. On-going prevention and control programmes generate much-needed data whose quality and value depend on the knowledge and capacity of the health personnel who generate and manage them. This study aims to explore the knowledge of roles and responsibilities of health personnel in HIV data management on matters related to their job description and functions as well as their job-specific training and work experience. **Methodology**: A qualitative, observational study involving 45 purposively selected participants was conducted among both facility-based health workers and staff of government agencies and implementing partners in the area of HIV/AIDS data management using focus group discussions (FGDs) and in-depth interviews (IDIs). Transcription and content analysis were done manually, excel spreadsheet was used for coding. **Results**: The knowledge of job titles descriptions and functions was found to be adequate among respondents in this study. Experience on the job and job-specific training were also sufficient. The presence of donor-driven activities is still evident. Frequent assignment of *ad hoc* duties to HIV/AIDS data management staff exists, especially in health facilities. **Conclusion**: The allocation (assignment) of trained and skilled personnel dedicated to the sole purpose of HIV data management alone is recommended at all levels (from data collection to dissemination), to improve data quality and reliability.

Keywords: *Data management, HIV/AIDS, Job description, Roles and responsibilities, Training*

Introduction

The scourge of HIV/AIDS has taken a significant toll on many sub-Saharan African countries, accounting for at least two-thirds of the global burden of the disease.[1-4] Nigeria falls in this sub-region and reportedly ranks second after South Africa among the leading nations contributing to about 80% of people living with HIV, which translates to about 25.7 million people across the sub-region.[1,3] Several measures have been taken by the governments of nations within the sub-region (alongside community-based and civil society organisations as well as a range of many developments and implementing partners) to control the disease and curtail its spread over the last three to four decades.[3] These interventions include the provision of preventive and control services and supplies such as voluntary counseling and testing (VCT), anti-retroviral therapy (ART), prevention of mother-to-child transmission (PMTCT), health education and advocacy for safe sexual practices such as abstinence, mutual fidelity and the use of condoms (particularly with regards to key populations and vulnerable groups), etc.[1,3,4]

In Nigeria, government agencies exist at both national and state levels for the coordination of activities in the control of HIV/AIDS. These are the National Agency for the Control of AIDS (NACA)[5] and the different State Agencies for the Control of AIDS (SACA) across the 36 states of the federation.

Cite this article as: Victoria N. Omole, Nuhu N. Butawa, Comfort K. Kingsley-Randa, Isah S. Baka, Solomon A. Lubo, Nafisat O. Usman.; Addressing Systemic Challenges in HIV/AIDS Data Management: A Study on Personnel Training and Experience in Sub-Saharan Africa. Kanem J Med Sci 2024; 18(1): 15-21

Received: 25th May 2023 **Accepted: 20th January 2024** **Published: 30th April 2024**

Like any control programme in the health sector, HIV/AIDS-related data are generated and managed and such data become essential for informed, evidence-based decision-making by health authorities toward better healthcare delivery as well as in managing the control programmes of the disease.[6-9] Baseline data is relevant in investigating the *status quo* of the magnitude (morbidity, mortality, etc) of the disease burden. Furthermore, data also comes into play in measuring the impact of the control measures implemented as well as in monitoring the trend of the disease over time.[7] The quality of data generated in this process depends on the calibre of human resources involved in data management, as well as their knowledge of their roles and responsibilities in that regard. The State Agency for the Control of AIDS in Kaduna State (KADSACA) operates at the state level, while the Local Government AIDs Control Agency (LACA) at the LGA level, with different responsibilities at each level regarding HIV data management. Diverse categories of health workers and other stakeholders are involved in the process. These include facility-based health workers as well as LGA, KADSACA, State Ministry of Health (SMOH), and State AIDs and Sexually Transmitted Infections Control Program (SASCP) staff.

This qualitative study endeavours to delve into the understanding of health personnel engaged in HIV/AIDS data management, focusing on the comprehension of their roles and responsibilities. The objective is to shed light on the prevailing data management practices within the state. By doing so, we aim to uncover any existing lacunae or potential obstacles in the current data management approach that may necessitate intervention for system improvement. Furthermore, this study also examines aspects related to the training and professional experience of the health personnel, providing a comprehensive overview of the situation.

Materials and Method

Study Area: There are 23 LGAs in the state. The 4 metropolitan LGAs constituting the state capital (Kaduna metropolis) were involved in the study- namely, Chikun, Igabi, Kaduna North, and Kaduna South LGAs. In each LGA, 3 health facilities were visited - a primary, a secondary, and a private health facility (except for Kaduna North LGA where a tertiary facility was visited in the absence of a secondary health facility). A total of 113 health facilities provide HIV care and treatment services across the state. While all of them offer HIV testing services (HTS), only 63 and 53 of them provide PMTCT and ART services, respectively. There are a total of 53 comprehensive sites within the state; 26 of them are located in the four focal LGAs covered in this study, which provide all three (ART, PMTCT, and HTS) services.

Study Design: A descriptive cross-sectional study employing qualitative (FGD and IDI) methods of data collection was conducted between September and October 2019.

Study Population: Facility-based HIV/AIDS-related health workers as well as staff of KADSACA, SMOH, and the LACA staff from selected LGA who were available during the period of the study and consented to participating in the study were included in the study.

Sampling Technique: Purposive sampling was used. Focal persons/coordinators in charge of only one HIV/AIDS service delivery or thematic area (namely; HTS, PMTCT, or ART) were included in the study. However, some health facilities had one or two persons co-ordinating all three services- these individuals were excluded from the study. LGA, SMOH, and KADSACA staff members involved in HIV data management were also intentionally recruited into the study.

A total of 37 in-depth interviews (IDIs) were conducted involving the HTS, PMTCT, and ART focal persons/co-ordinators in the health facilities in all health facilities providing comprehensive HIV/AIDS services (HTS, PMTCT, and ART), the four LGA PHC Co-ordinators as well as KADSACA Executive Secretary, M&E officers. Others were the State HMIS Officer, the SASCP M&E Officer, a representative of the Director, Public Health (SMOH), and representatives from HIV implementing partners. Two focus group discussions (FGDs) were also conducted involving 8 participants; they included the LGA M&E Officers as well as LACA M&E Officers and Co-ordinators.

Data Collection Method: All FGDs and IDIs were conducted by a moderator assisted by a note taker; and were digitally recorded. The question guide for the FGDs and IDIs included a range of questions on key HIV data management practices, centered around the participants' knowledge and understanding of their various job descriptions as well as their training and work experience. A total of 2 FGDs were conducted – A group consisted of the 4 LACA M&E and the 4 LGA M&E officers from the selected LGAs while the second group was for the LACA Coordinators from the study LGAs only, the grouping was because of the perceived similarities in their roles.

Data Analysis: Information collected from the interviews was transcribed verbatim; transcription was done manually. Leveraging on the concept of content analysis, patterns were manually identified from the transcribed texts, by grouping content into words, concepts, and themes. These were organized and plotted into an Excel spreadsheet to make more sense (and clarity) of the data

and for the ease of the coding process. The codes were created and labeled based on the information collected. Finally, the codes created were analysed to identify patterns and correlations with the study objectives and to create the narratives and discussion of the study.

Ethical Considerations: Signed, informed consent was obtained from all participants. Ethical clearance was also sought and obtained from the Health Ethics Research Committee of the Kaduna State Ministry of Health (No: NHREC/17/03/2018).

Results

Table 1: Socio-demographic characteristics of participants interviewed (n=45)

Variable	Frequency (%)	Variable	Frequency (%)
Age (years)		Educational status	
35-40	15 (*33.3*)	Secondary	0 (*0.0*)
41-45	21 (*46.7*)	Post-secondary	45 (*100.0*)
46-50	5 (*11.1*)	Number of years in current role	
51-55	4 (*8.9*)	< 1	3 (*6.7*)
Sex		1-5	26 (*57.8*)
Male	25 (*55.6*)	6-10	8 (*17.8*)
Female	20 (*44.4*)	11-15	3 (*6.7*)
Marital status		16-20	5 (*11.1*)
Married	44 (*97.8*)	Religion	
Single	1 (*2.2*)	Christianity	22 (*48.9*)
		Islam	23 (*51.1*)

A total of 45 participants were recruited into the study (25 males and 20 females); 21 (46.7%) of them were aged between 41 to 45 years. Forty-four (97.8%) of them are married and one (2.2%) is single; their religious affiliations are Christianity (48.9%) and Islam (51.1%). All of the participants had a post-secondary level of education while over half (57.8%) of them had 1-5 years of working experience in their current roles.

Table 2: Showing the central themes, sub-categories, and codes

Central Themes	Sub -Categories	Codes
Knowledge of Roles and Responsibilities	Job Titles and Responsibilities	Data Entry Clerk, ART Focal Person, LACA Coordinator
	Clarity of Roles	Poor Clarity, Clear Understanding
	Ad Hoc Responsibilities	As Needs Arise
Involvement in Other Functions	Additional Tasks	Attending to Routine Patients, Managing Health Records
	Handling Multiple Thematic Areas	Single Individual Handling All Areas, Handling One and Supporting Another
Responsibility -Related Trainings	Type of Training	Donor-Sponsored, Government-Sponsored, Self -Sponsored
	Frequency of Training	More Training for State, LGA, and Health Facility Staff
Duration of Service in Current Role	Length of Service	At Least Two Years, Less Than Two Years

This table provides a structured overview of the key findings from the qualitative study. It highlights the main themes, the sub-categories within these themes, and the specific codes or key points associated with each sub-category.

Knowledge of roles and responsibilities

While the respondents generally had a clear knowledge of their job titles and were also able to outline their expected responsibilities, they seemed not to have clearly defined roles in the conduct of their routine operations and daily activities.

"I am the data entry clerk and ART Focal person in this Hospital; I collate data from other units of the facility and validate the data from HTS, ART, and PMTCT in this facility". - Private Health Facility staff

"I collect data for ART, but most times, I do HV counseling and testing, support the PMTCT officer, and also coordinate referrals in the health facility. My title is not clear, I am learning but it is very stressful". - Public health facility staff

Poor clarity of knowledge and understanding of roles was particularly evident in the LGAs and also affected the ability of the staff to perform as expected. One respondent had a poor understanding of the meaning of some key HIV indicators and how to collect data.

"The data is not my responsibility or that of the LACA M&E. I am the LACA coordinator and I coordinate, but if you ask me about the data, I don't know anything about data, or analysing or using it" – LACA Coordinator

Responsibilities were only assigned as the need(s) arose, in a rather *ad hoc* manner, especially in the health facilities. However, contrary to this trend in the facilities and LGAs, respondents working with implementing partners had a clear knowledge of their job descriptions, roles, and responsibilities. They were also able to clearly state their key roles and responsibilities in their various capacities.

Involvement in other (ad hoc) functions

Most of the respondents reported being frequently engaged in other tasks besides their key (or primary) responsibilities of HIV data management. These include attending to routine patients in the health facility and managing the health facility's health records. Furthermore, some of the facilities had only one individual juggling the management of data in all three HIV/AIDs service delivery (thematic) areas alone. In other settings, an individual either handled two thematic areas or handled one and also provided support or assistance for another as reported as follows:

"*I am the PMTCT coordinator in this health facility and the deputy ART co-ordinator. I also have an assistant PMTCT officer who handles some aspects of the PMTCT service delivery and documentation. I support the ART Co-ordinator in his absence to dispense drugs and then keep the data for him to document when he comes back.*"- Health Facility PMTCT Co-ordinator/Asst. ART Officer

Responsibility-related training

The respondents have previously attended trainings which were directly related to their key responsibilities. These trainings were either donor- and/or government-sponsored. Only one of them had self-sponsored, job-related training; this particular IDI respondent said:

"*I am an M&E consultant, involved in data validation and every other thing that concerns data and M&E activities. I have been trained in data management using SPSS and I sponsored myself.*"

The State, LGA, and health facility staff attended more job-related trainings compared to the respondents working with implementing partners. The responses below support this assertion:

"*I have attended several trainings; they include training on the NHMIS tools, how to collate and administer data and manage data on the DHIS2 platform; quality assurance and data management/supportive supervision for health facilities in the state.*" -State Officer

"*I have attended much training sponsored by FHI 360 and KADSACA. I have been trained on HTS, NHMIS data recording and collection tools, and laboratory equipment.*"- Health facility staff

On the other hand, it is noteworthy to report that about 10% of the respondents have yet to receive any form of job-related training. One of such respondents shared that he independently learned how to collect HIV data using job aids that were supplied by implementing partners.

"I have worked in this facility for 5 years but I have never been opportune to go for any training, I manage the ART and PMTCT registers. And how this I learn to use these registers? From the manuals that were provided by the partners supporting us". – Health facility staff

Duration of service in current role

Most of the respondents had worked in the same capacity for at least two (2) years. A few on the other hand had worked for less.

A health facility staff said: "*I have worked for only four (4) months at the facility.*"

Another public health facility staff reported that: "*I worked for three (3) months; then went on a one-year leave. I have worked so far, for seven (7) months as the PMTCT focal person in this facility*."

Discussion

Although the general knowledge of job titles and the ability to outline expected responsibilities was universally adequate among the respondents, reports of poor clarity of the knowledge and understanding of their various roles coupled with the frequent practice of

assigning *ad hoc* duties to them were evident. The assignment of other hospital and clinical responsibilities to HIV data documentation staff is bound to ultimately affect the quality of HIV data management and undermine the focused input of these staff into their primary duties, as many of them would eventually get overworked and operate with divided attention. A Malawian study, for instance, associates a higher quality of HIV data (management) with having dedicated clerks for record-keeping duties alone.[10]

With regards to HIV data management across the African continent, several studies have consistently reported challenges of data incompleteness and inaccuracy as well as a lack of concordance between diverse registers and other sources of the same information; and delay in reporting.[8,10-13] Some of these irregularities have been attributed to not only the processes involved in data management but also the contexts and circumstances of data collection and generation[11] such as observed in this study. A high work burden has been reported in South Africa and other countries among data collection and collation staff due to a severe shortage of health informatics skills and manpower.[11,14] Common scenarios include understaffed facilities despite the availability of adequate data management tools.[12,14] Furthermore, this often results in the involvement of and dependence on other clinical staff who may not necessarily have the requisite training, capacity, skills, and time to assist with HIV data collection and management.[10,12,14]

Without any doubt, job-specific training is a very crucial and critical factor in the manner in which HIV data are generated and managed.[8,12] Training is a recognised factor in improving the proficiency and efficiency of employees in the management of complex and voluminous data,[15] which is typical of many HIV/AIDS control programmes in several developing countries worldwide.[11,13] While many of the respondents in this study had previously attended training which were directly related to their key responsibilities, a few of them were yet to receive such training. This is likely to reflect negatively on their performance on the job and the quality of their work output; namely, HIV data management and quality.

The trainings reported in this study were either donor- and/or government-sponsored. This is not surprising as many intervention programmes in the area of HIV prevention and control in sub-Saharan Africa, including technical and other forms of support such as in the area of data management are still donor-driven.[11,12,16,17] This is rather not encouraging and may spell a bleak situation going forward, particularly if such implementing partners withdraw their support at any time in the future.[12] Undoubtedly, these external interventions of humanitarian and technical assistance have contributed immensely to the overall reduction of HIV infection rates across Africa.[16] However, the call for continuous, indigenously funded, and technically supported training of data-capturing and management personnel should be emphasised in all low-and-middle-income countries.[12,13,17,18]

Beyond the knowledge of one's roles and responsibilities, another important factor that enhances the performance of data management personnel and the quality of data is experience. Experience not only provides exposure (of data management personnel) to the demands and requirements of the job; it also creates learning opportunities that can be translated into higher performance and improved data quality outcomes.[19] This observation not only relates to the individual worker alone. A study reports that health facilities with longer experience in providing ART services, for instance, are more likely to generate quality HIV/AIDS-related data; with a positive association between experience and a higher data quality performance.[8] This was also attributed to the regular, intensive quarterly supervision that these facilities received.[10] The respondents in this study may not necessarily be considered novices in the field as most of them have worked in their various capacities for at least 2 to 5 years or more. Many advertisements for diverse HIV/AIDS-related jobs in different technical capacities by international agencies such as UNICEF, UNDP, and UNFPA require similar durations of working experience.[20-22] Evidently, this aspect (of their experience) may reflect a good omen for the operations and prospects of HIV data management in the study area.[23]

Conclusion

The knowledge of job titles and expected responsibilities was found to be adequate among the respondents in this study. Experience on the job and job-specific training were also sufficient, although the presence of donor-driven activities is still evident. The frequent assignment of *ad hoc* duties is a potential threat that may undermine the quality of HIV data management. The allocation (assignment) of trained and skilled personnel dedicated to the sole purpose of HIV data management alone is recommended at all levels (from data collection to dissemination). This would contribute to improving data quality and reliability.

Limitations: information obtained from the respondents was purely self-reported and as such, may be subject to recall bias as well as different forms of response biases such as courtesy, acquiescence, and social desirability biases.

Conflict of Interest: The authors declare no conflict of interest.

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